



25th world gas conference
"Gas: Sustaining Future Global Growth"

Diverging Gas Price Influences – Is A Global Gas Price Possible?

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Venue: Kuala Lumpur Convention Centre



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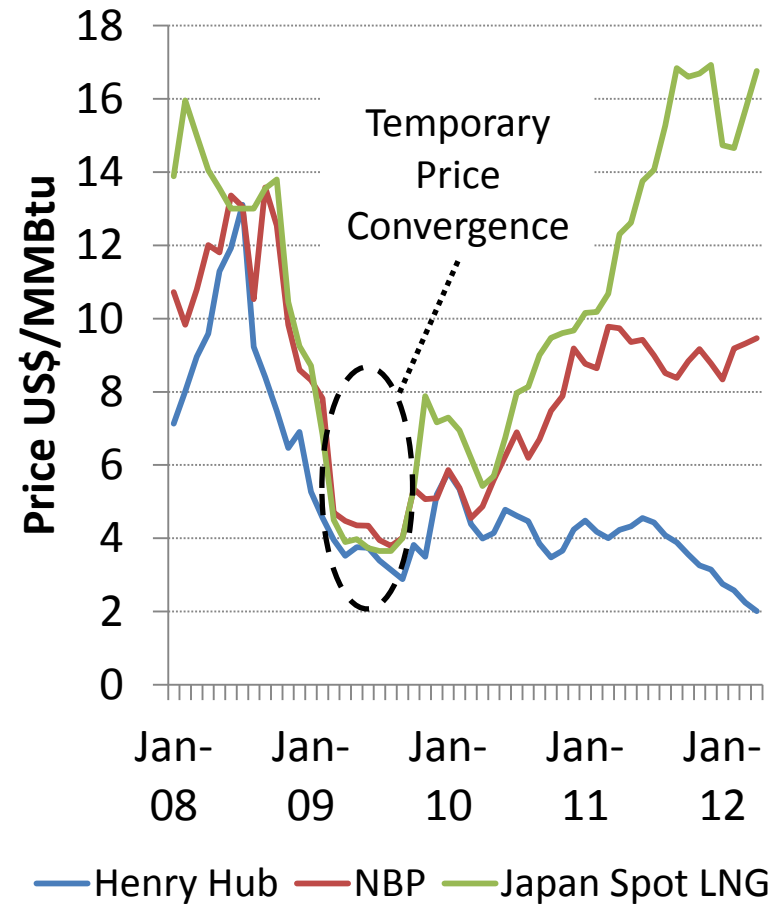


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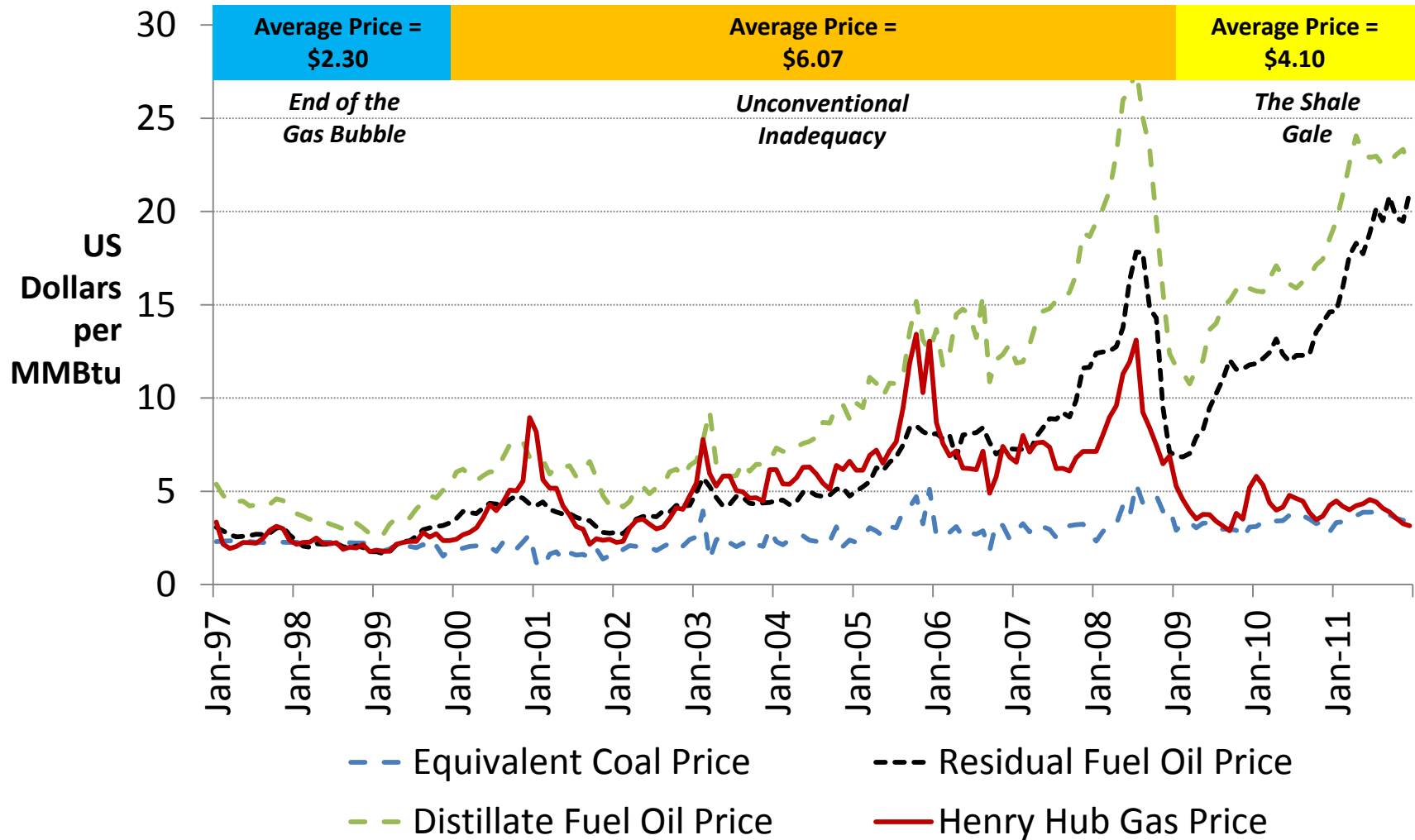
Introduction

- Global gas industry has experienced unprecedented change in the last 2-3 years
 - Major expansion in gas liquefaction capacity and increasing significance of unconventional gas
 - Diverging regional trends in gas consumption
 - Increased supply flexibility along the gas supply chain
- Net result - convergence and divergence of regional gas prices despite considerable geographical variation in the factors behind gas price formation
- BUT is a global gas price both possible and sustainable?

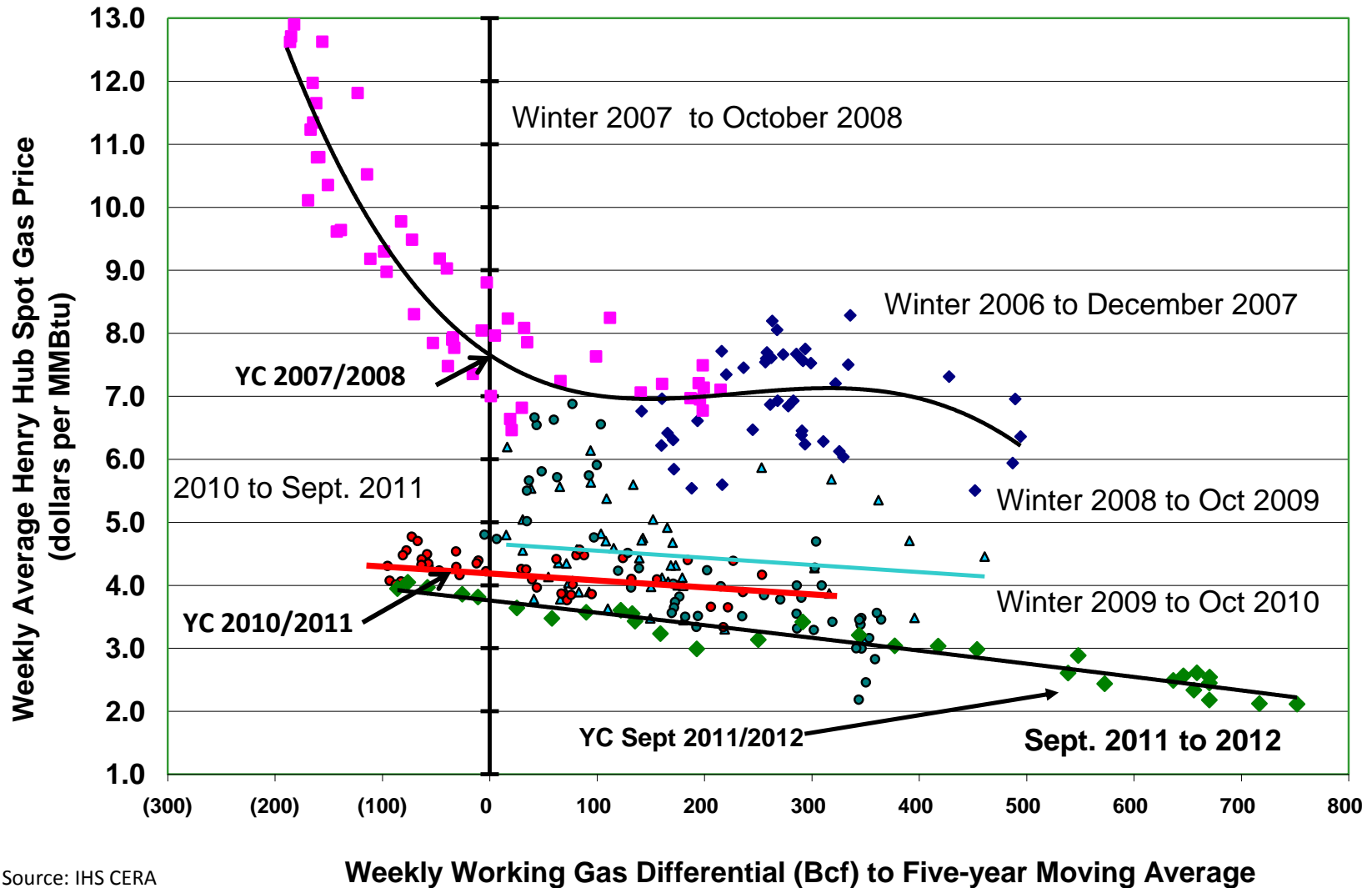


Source: IHS CERA.

Eras in North American Natural Gas Pricing

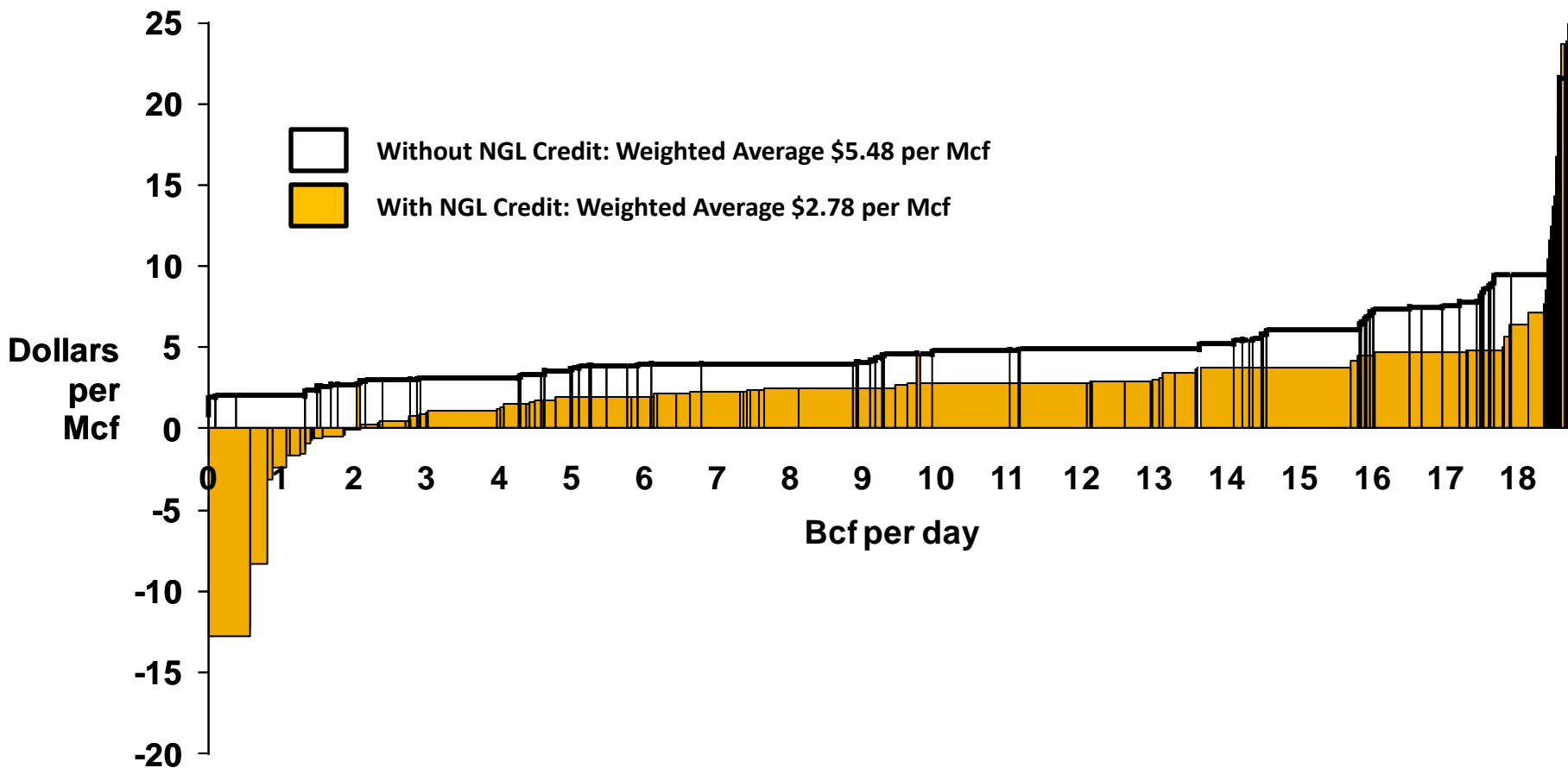


The Shifting North American Yield Curve



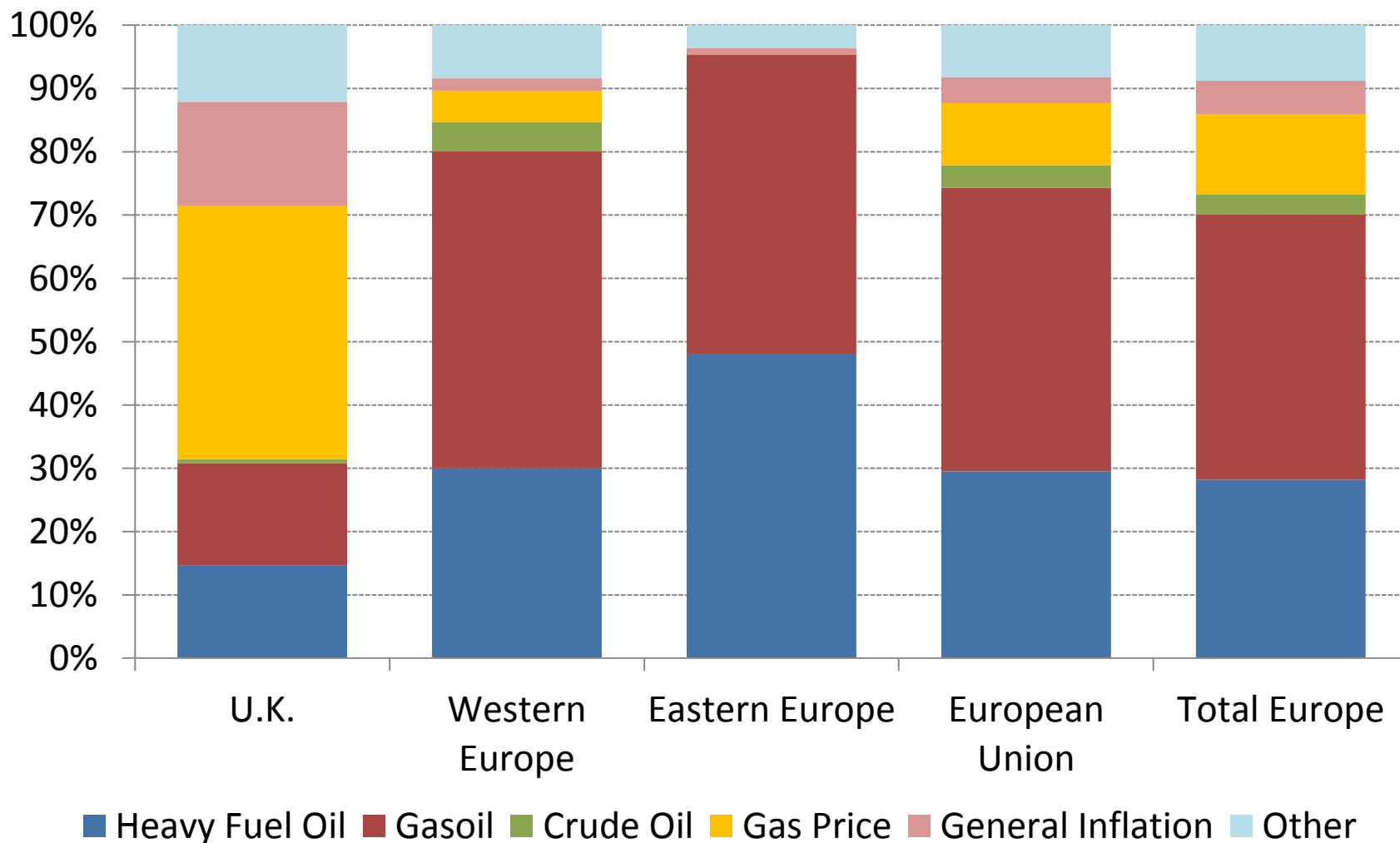
Source: IHS CERA

Full-Cycle Unit Cost of New North American Supply (2011)

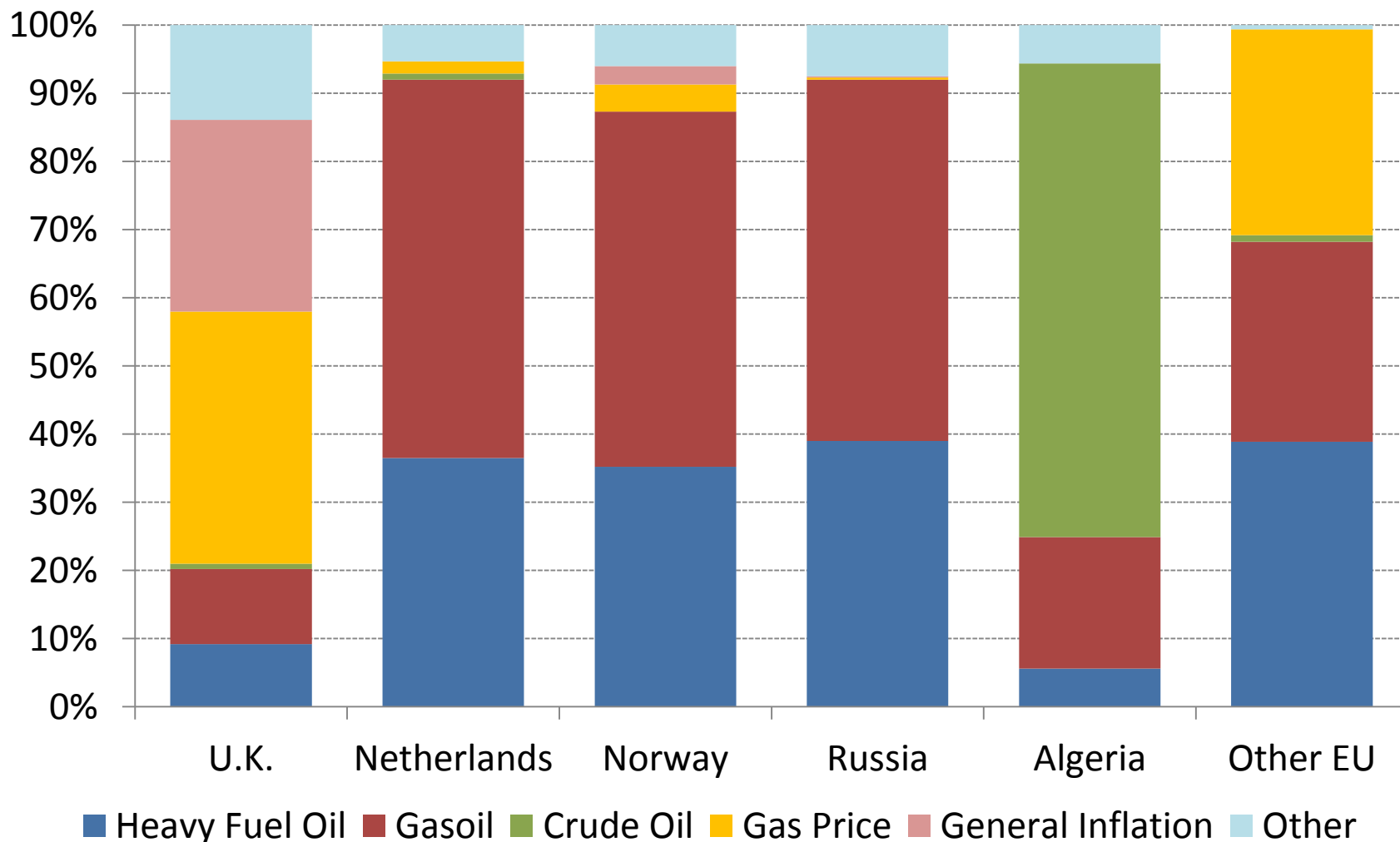


Source: IHS CERA.

European Gas Price Indexation – Importing Countries, 2004

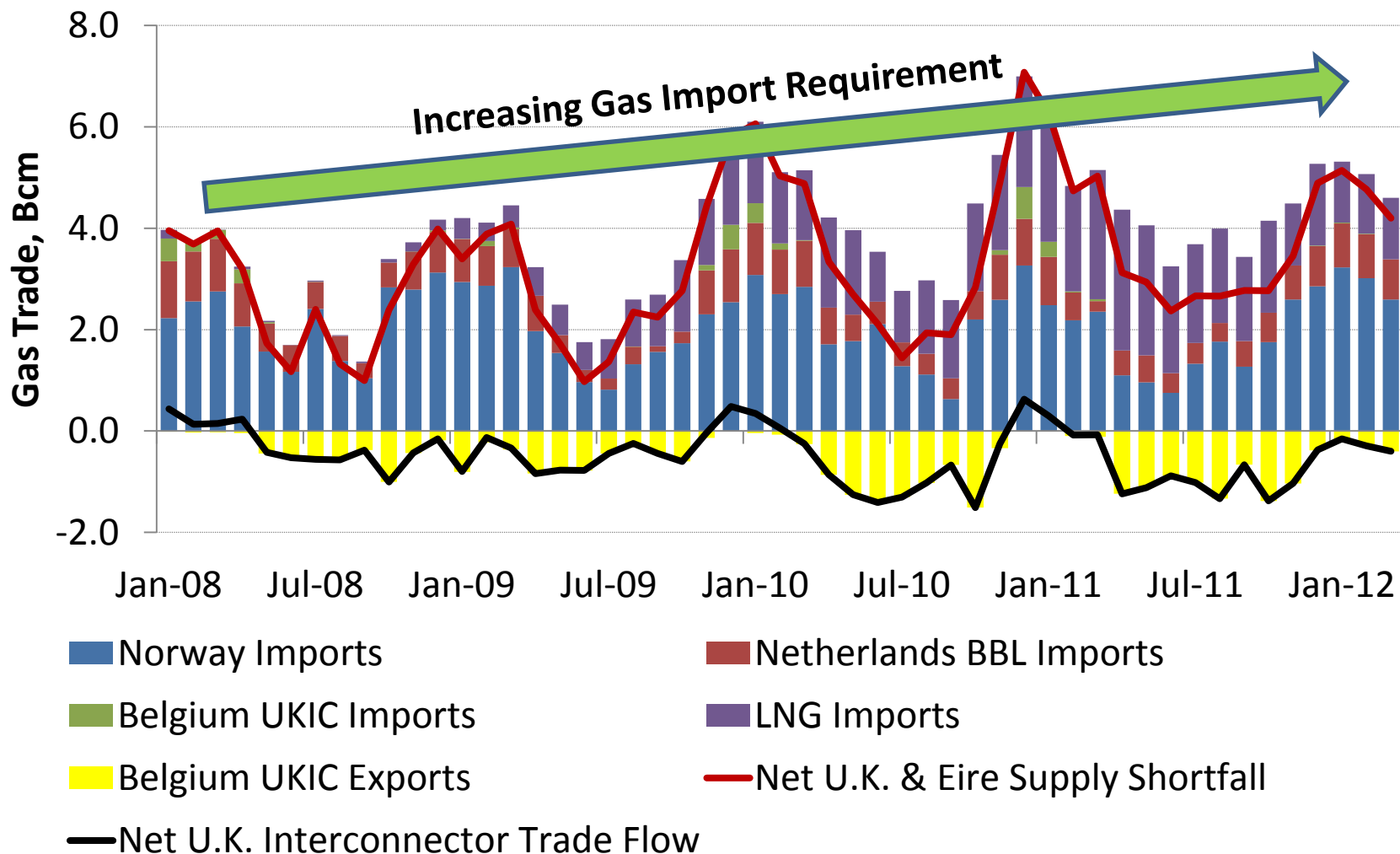


European Gas Price Indexation – Producer/Exporting Countries, 2004



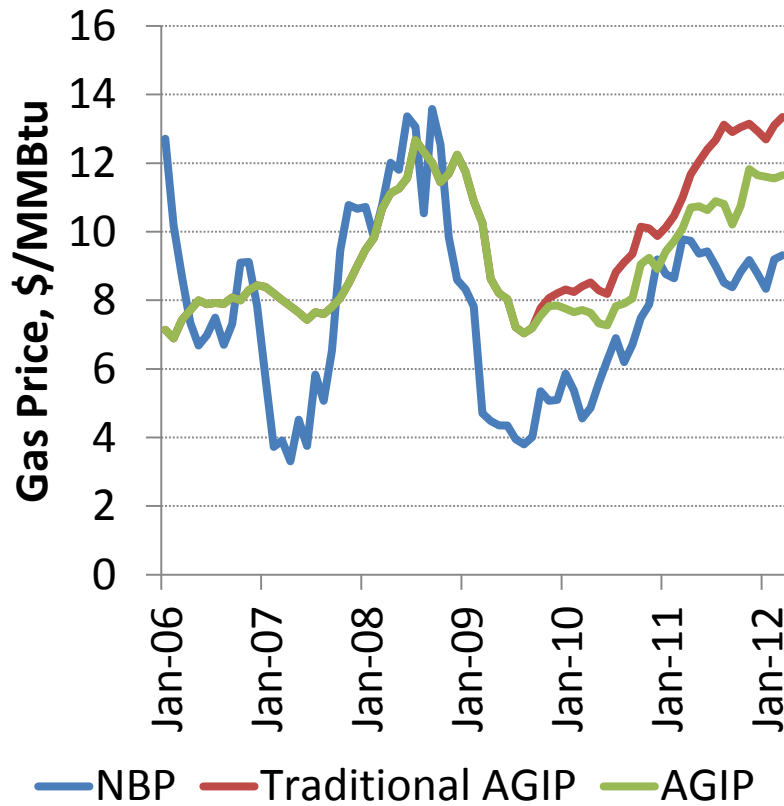
Source: Preliminary Report, Presentation of DG Comp's Findings, Competition Directorate-General, 16 February 2006

U.K. - The Gas Gateway To Continental Europe

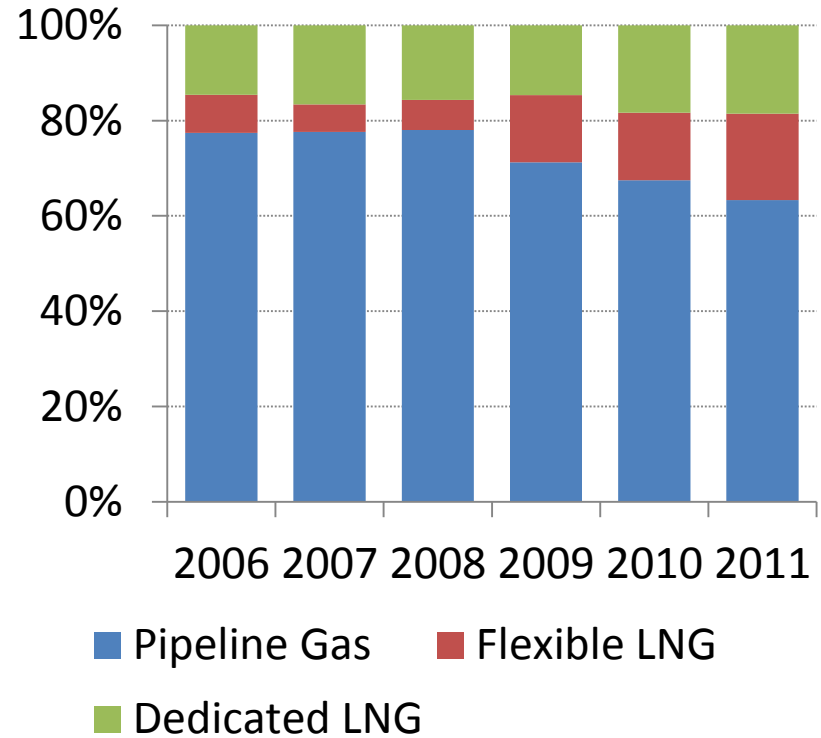


LNG vs Pipeline Gas Competition in Europe

N. Europe Gas Prices

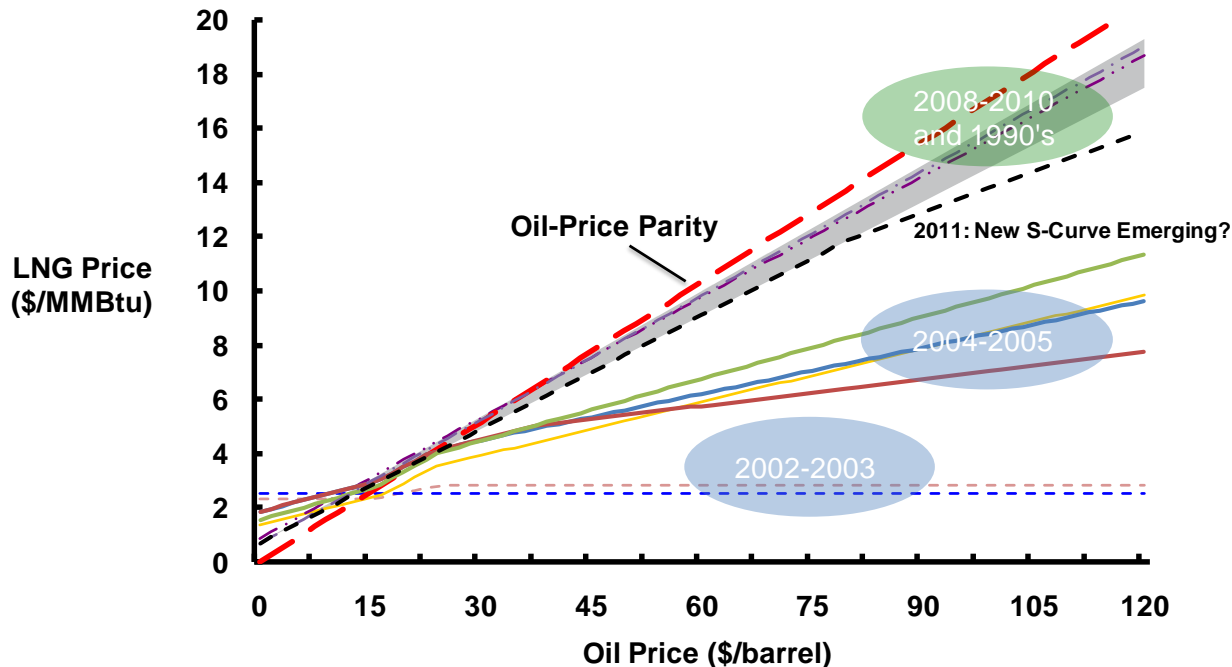


Net Gas Import Distribution



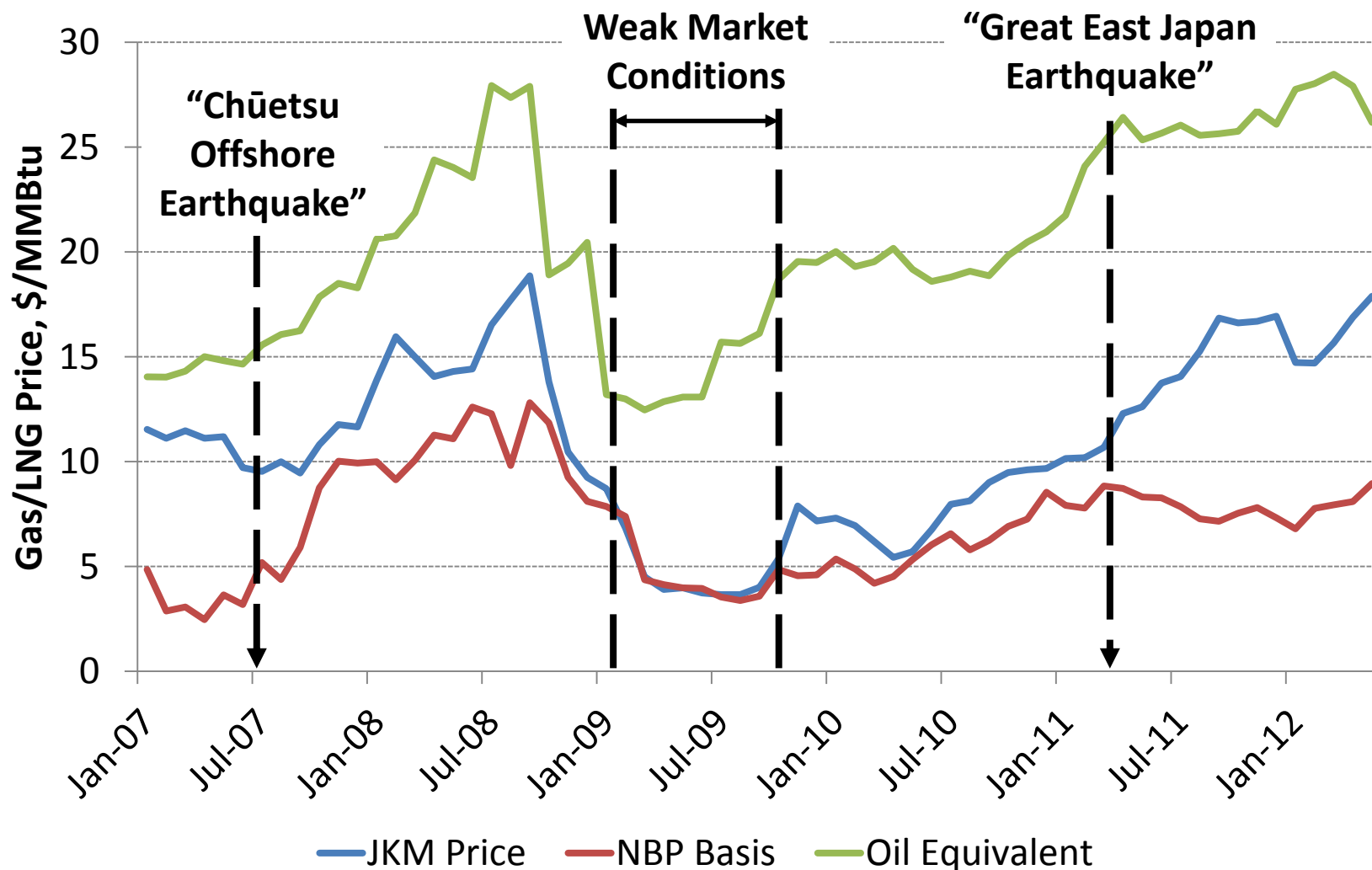
Term LNG Contract Pricing Into Asia

Historic Long-Term LNG Supply Pricing in Asia

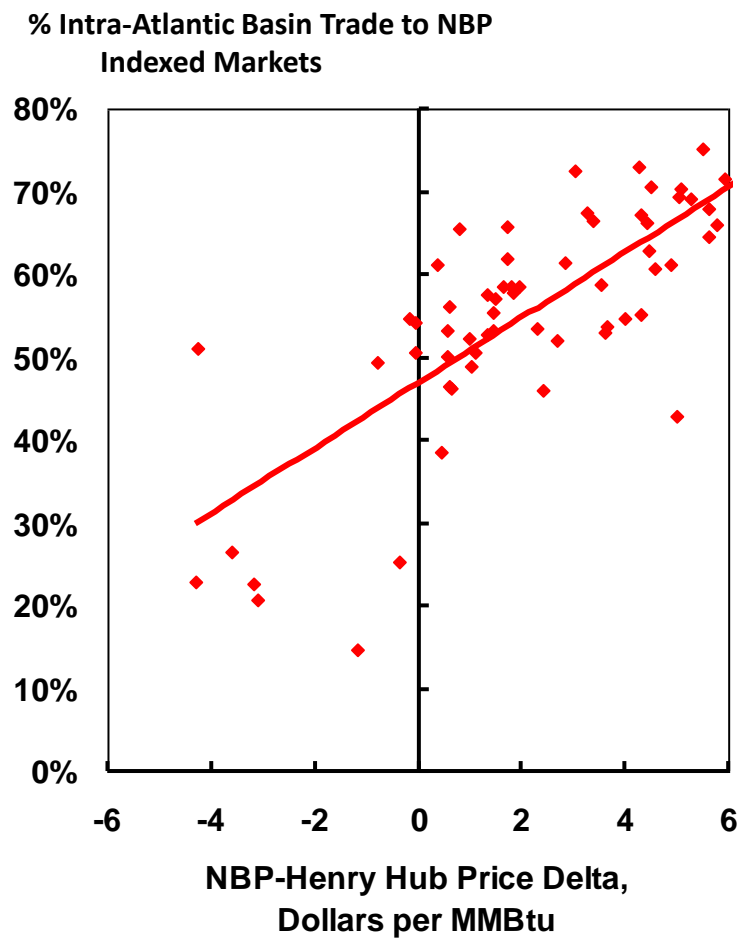
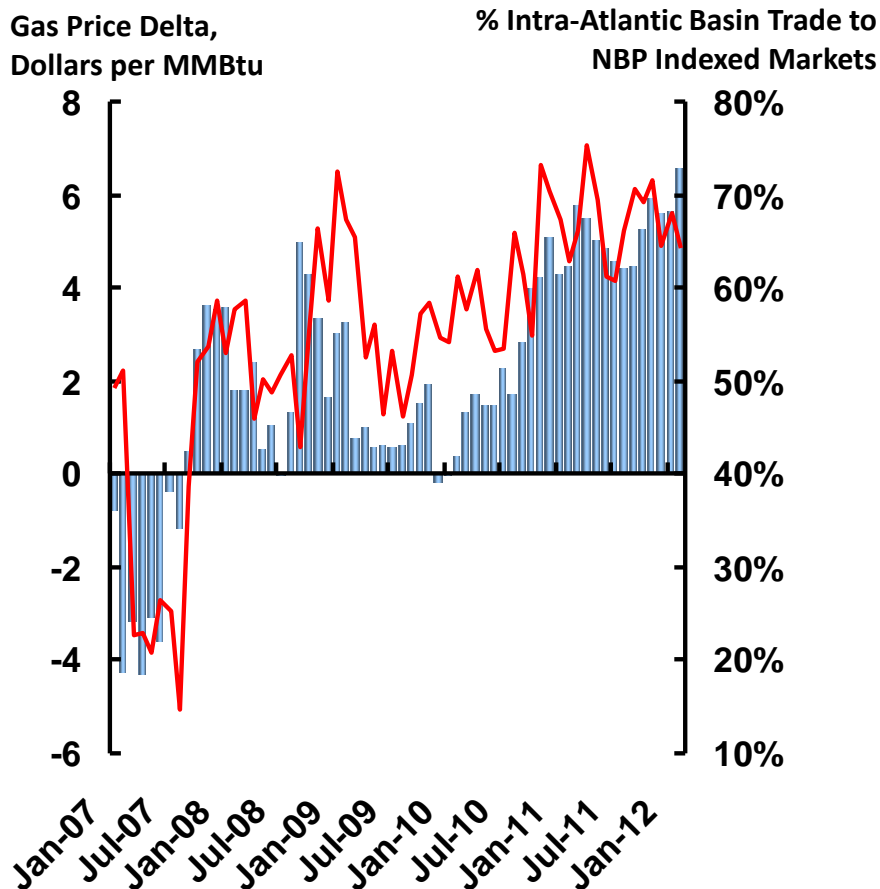


- Oil price indexation since the 1970s
- 1980s - “S-curves” introduced
- Significant change in the late 1990s/early 2000s
- Recent contract pricing at upper limits of historic pricing mechanisms
- Reintroduction of “S-curves”

Northeast Asia Spot LNG Price Influences



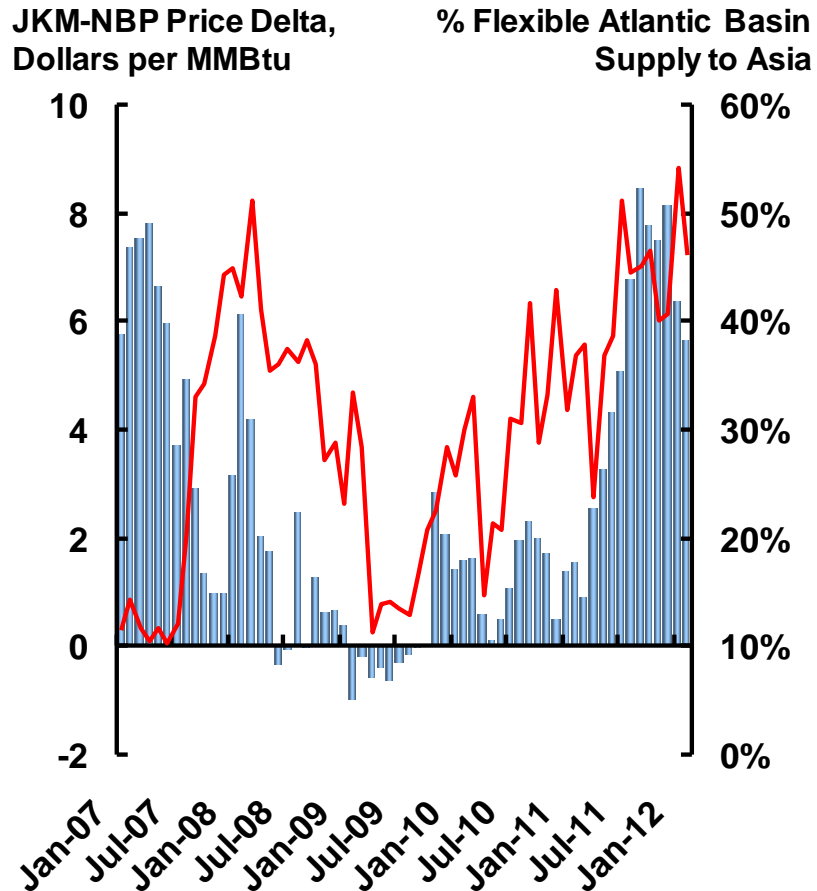
Spot LNG Price Indexation To NBP Is Driving Intra-Atlantic Basin LNG Trade...



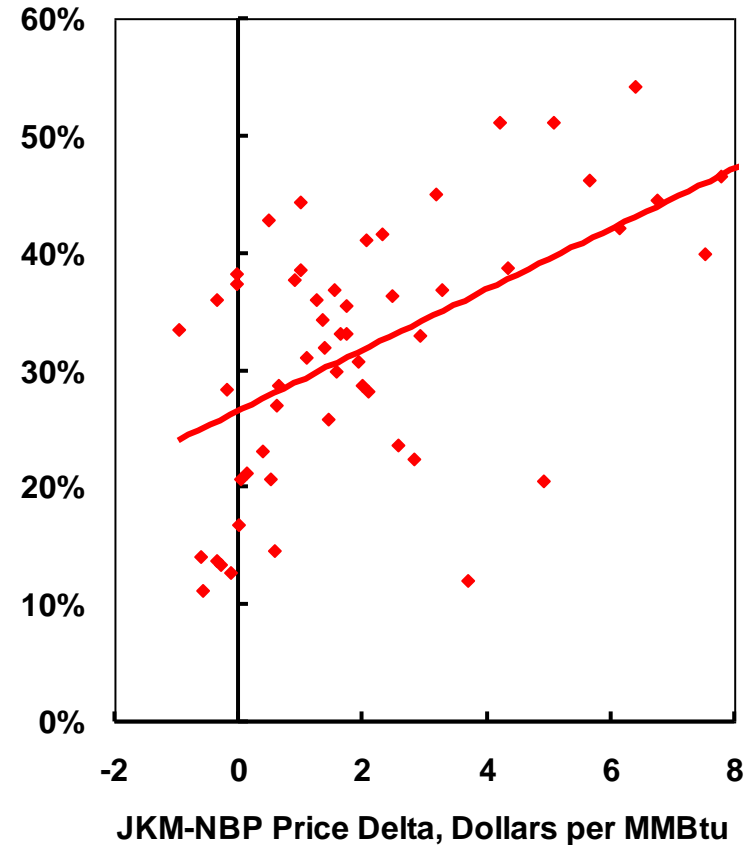
■ NBP-Henry Hub Price Delta
 — % Intra-AB Trade to NBP Indexed Markets

Source: IHS CERA.

Atlantic Basin-Asia LNG Arbitrage Trade Is a Function of Regional Price Differences...



% Flexible Atlantic Basin Supply to Asia



■ JKM-NBP Price Delta
— % Atlantic Basin Flexible Supply to Asia

Source: IHS CERA.

Potential Price Influence

- Cost of production
- Comparable of gas vs. coal in the power sector
- Development of potential LNG export projects
- Imposition of tighter exploration regulations

Expected Development Path

- Expected to remain low and the dominant influence
- Coal-fired capacity retirements to favour gas
- Export quantity uncertain but cost curve is long & flat
- Likely to occur with estimated cost increase of \$0.5-1.0/MMBtu

Prolonged Period of Low North American Gas Prices Expected

Changing Global Gas Markets: Temporary or Permanent? Any New Influences? – Europe

Potential Price Influence

- Increasing structural import requirement
- Tightening near term global LNG market
- Sustainability of oil indexation of pipeline gas

Expected Development Path

- Near term shift in pricing power to sellers
- Increasing flexible LNG supply diverted to Asia
- Seller preference for oil indexation – a hybrid model to remain?

Co-existence of Oil and Gas Indexed Gas Supply To Continue – Dominance Dictated By Prevailing Market Conditions

Changing Global Gas Markets: Temporary or Permanent? Any New Influences? – Asia-Pacific

Potential Price Influence

- Strong regional demand outlook and supply security issues
- Tightening near term global LNG market
- Indexation to European and North American hub prices

Expected Development Path

- Pricing power with sellers to retain oil indexation for term supply
- Spot LNG prices at a premium to NBP reference
- High cost of new supply and insufficient NA export volume to force change

Market Fundamentals Insufficient to Break the Oil Price Linkage – Spot Prices Driven By Opportunity

Conclusions

- Experience has shown that a global price can be achieved but requires:
 - Free commodity movement between regions
 - Consistent product quality
 - Existence of a deep and liquid market in all regions
- For much of history the gas industry failed to meet these pre-requisites but increasing LNG supply flexibility, expanded supply infrastructure and a nascent spot market have gone some way to creation of an enabling environment
- Recent history has shown that global price convergence is possible
- BUT the North American “shale gale” has created the potential for a long-standing regional price dislocation
- Market fundamentals and supply security issues are expected to prevent sustainable Asia-Europe price convergence
- A global gas price appears unlikely although increasing flexible LNG supply will enable occasional market connectivity between Asia and Europe

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